

# Roper Construction, Inc.

Air Quality Permit Application

No. 9295



# Direct Testimony

Roper's Permit

How A Concrete Batch Plant Operates

Emission Control Equipment

Roper's Emissions

Facility Modeling

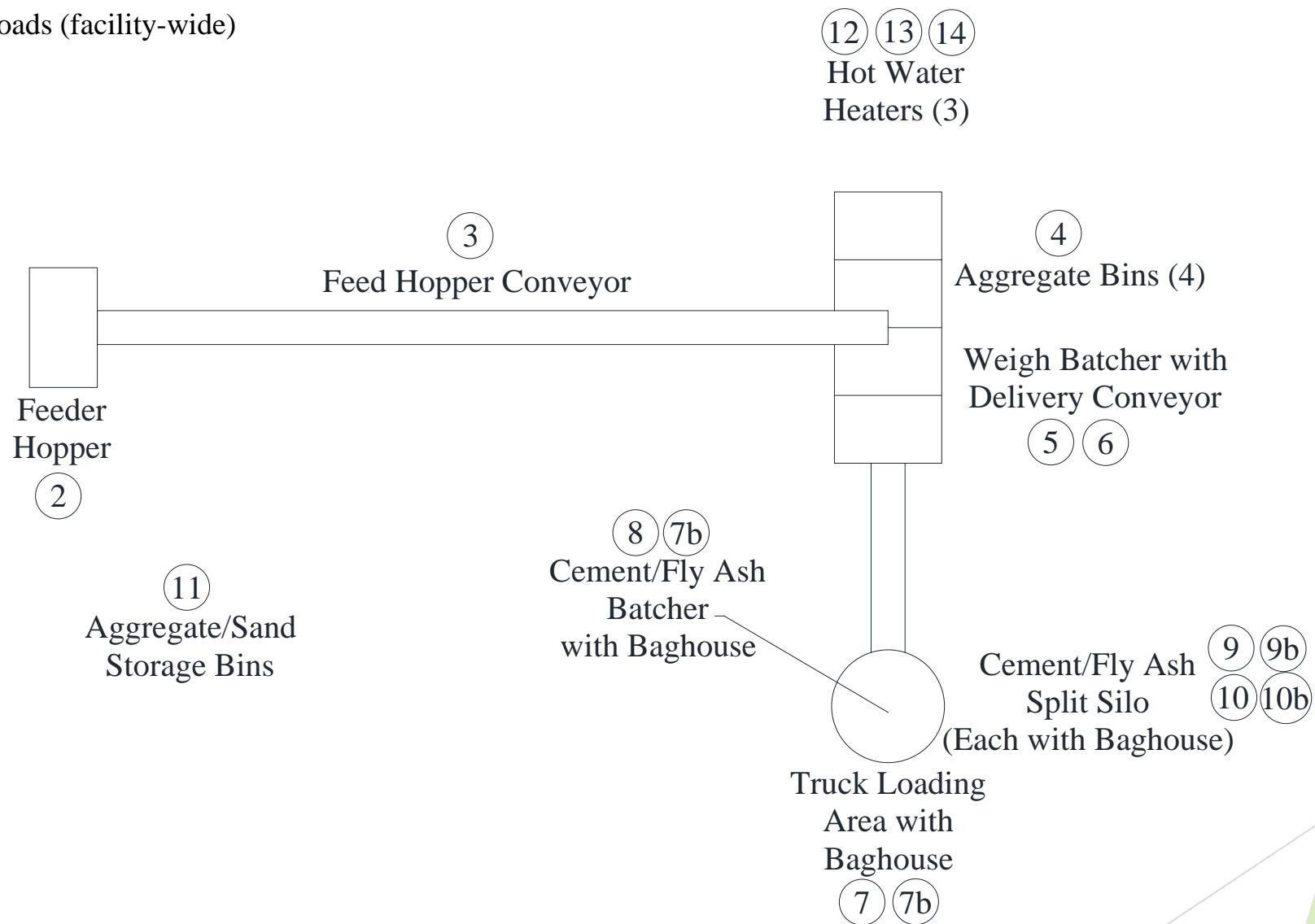
# Roper's Permit

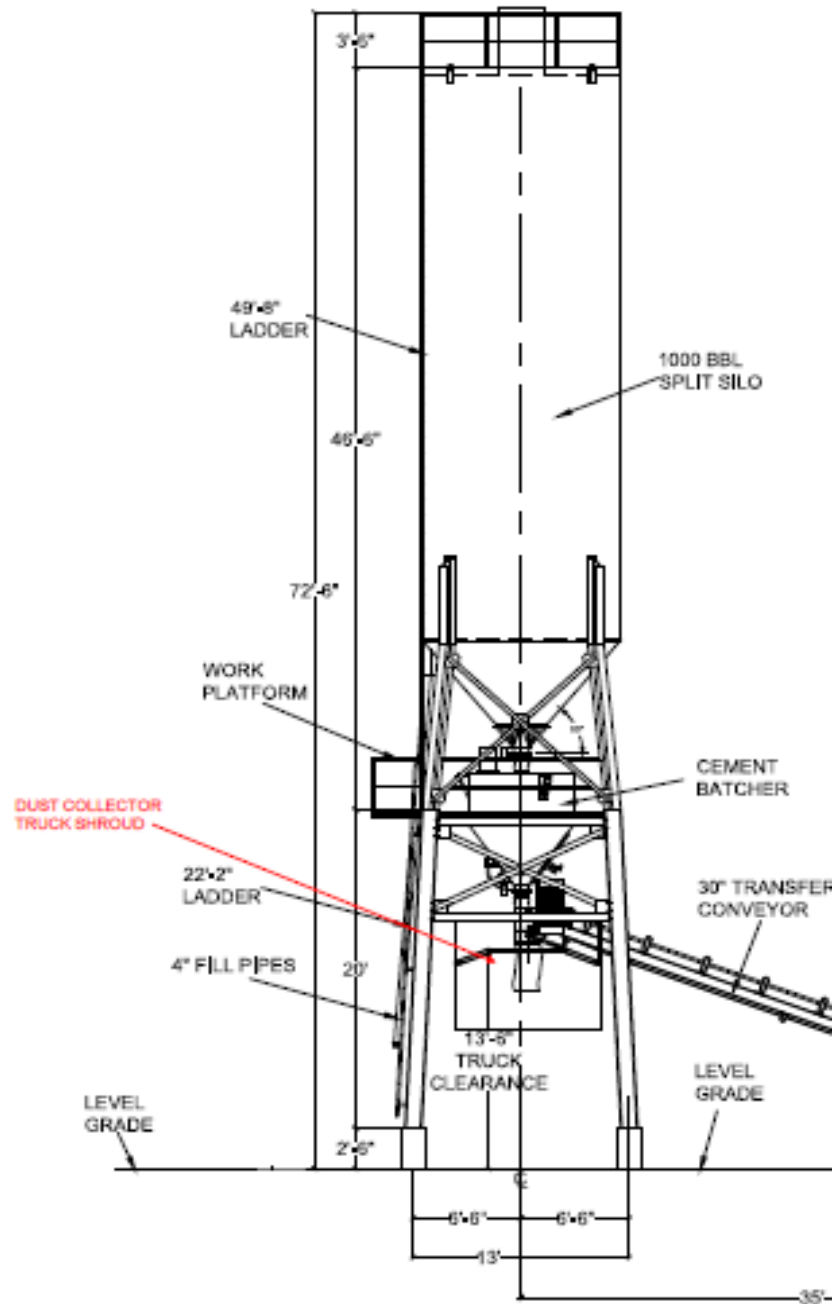
- Roper is applying for an NSR Minor Source Permit under 20.2.72 NMAC
- Application was submitted June 14, 2021 and ruled administratively complete on July 22, 2021
- 125 cubic yard per hour concrete batch plant with annual production limited to 500,000 cubic yards per year

# Facility Emission Sources and Control Equipment

Unit No.	Source Description	Control Device	Permitted Capacity
1	Haul Road		305 trips/day
2	Feeder Hopper		187.5 tph
3	Feeder Hopper Conveyor	3b - Wet Dust Suppression System, Controlling PM10 and PM2.5	187.5 tph
4	Overhead Aggregate Bins (4)	4b - Wet Dust Suppression System, Controlling PM10 and PM2.5	187.5 tph
5	Aggregate Weigh Batcher	5b - Wet Dust Suppression System, Controlling PM10 and PM2.5	187.5 tph
6	Aggregate Weigh Conveyor	6b - Wet Dust Suppression System, Controlling PM10 and PM2.5	187.5 tph
7	Truck Loading with Baghouse	7b - Baghouse Controlling PM10 and PM2.5	125 cubic yards per hour
8	Cement/Fly Ash Weigh Batcher		38.8 tph
9	Cement Split Silo	9b - Baghouse Controlling PM10 and PM2.5	30.6 tph
10	Fly Ash Split Silo	10b - Baghouse Controlling PM10 and PM2.5	8.25 tph
11	Aggregate/Sand Storage Piles		187.5 tph
12, 13, 14	Concrete Batch Plant Heaters (3 in total)		0.6 MMBtu/hr (total)

① Haul Roads (facility-wide)



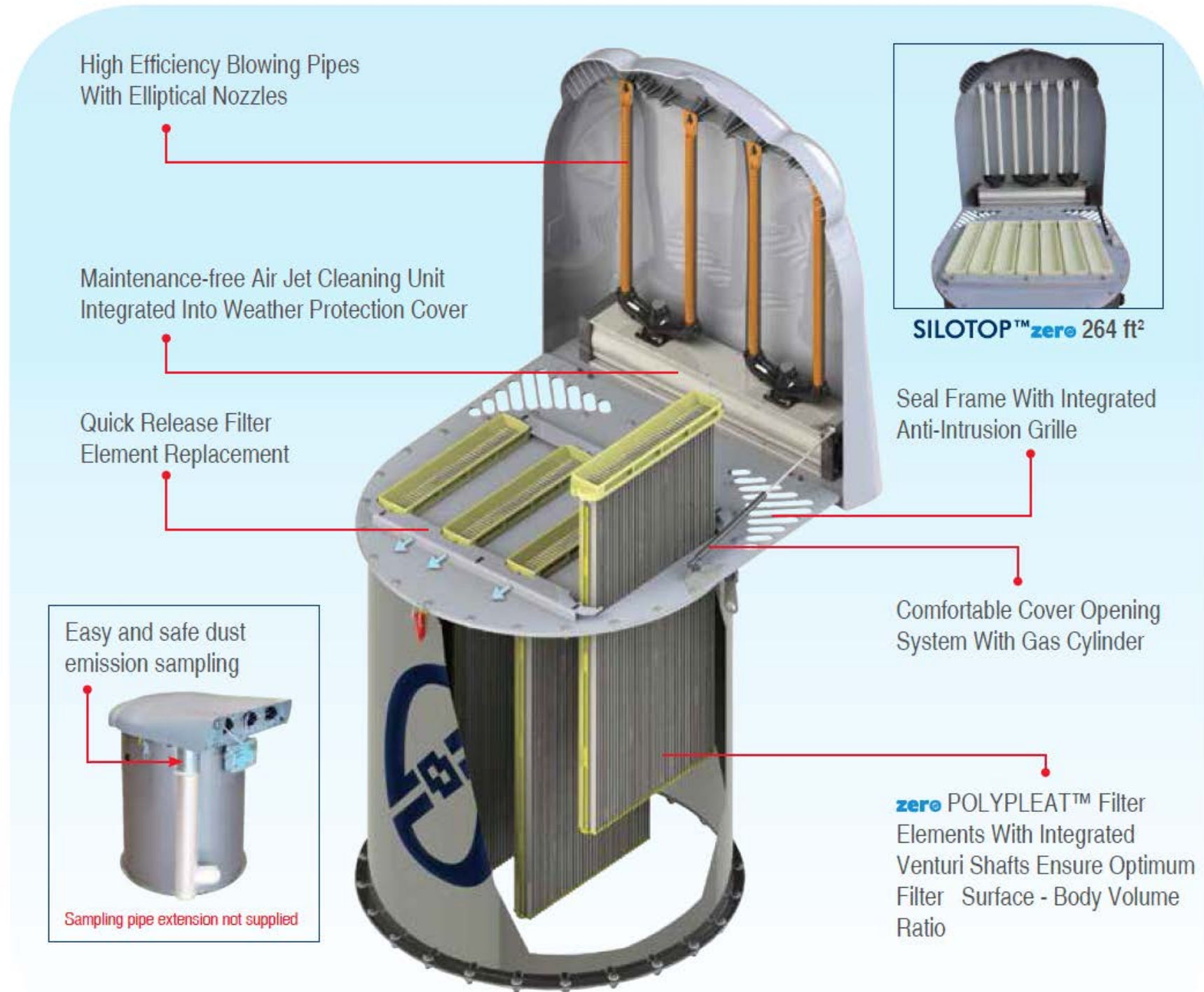


## Central Dust Collection System





Silo Baghouse





# Fugitive Dust Suppression

Increasing Moisture Content by either:

Wet Dust Suppression System

or

Additional Moisture at Aggregate Storage Piles

Draft Permit Condition A502



# Permit Allowable Emission Rates

Pollutant	Emissions (tons per year)
Nitrogen Oxides (NOx)	0.3
Carbon Monoxide (CO)	0.2
Volatile Organic Compounds (VOC)	0.03
Sulfur Dioxide (SO2)	0.003
Particulate Matter 10 microns or less (PM10)	1.7
Particulate Matter 2.5 microns or less (PM2.5)	0.3

Potential Emission Rate for Hazardous Air Pollutants (HAPs)	Emissions (tons per year)
Total HAPs	<1.0

Emission rates were determined using AP-42 emission factors for this type of facility.

# Ambient Impact Analysis

Pollutant	Model Averaging Period	Ambient Standard (ug/m3) (1)	SIL (ug/m3) (2)	PSD Increment (ug/m3)	Facility Contribution (ug/m3)	Cumulative Contribution (ug/m3) (3)	% of Criteria
NO2	Annual	94.0	1.0	-	0.87	-	SIL - 87%
NO2	1-Hour	188.03	7.52	-	20.8	59.5	NAAQS - 31.6%
PSD Class I NO2	Annual	-	0.1	2.5	0.0046	-	SIL - 4.6%
PSD Class II NO2	Annual	-	1.0	25	0.87	-	SIL - 87%
CO	8-Hour	9960.1	500	-	12.8	-	SIL - 2.6%
CO	1-Hour	14997.5	2000	-	50.5	-	SIL - 2.5%
SO2	Annual	52.4	1.0	2	0.01	-	SIL - 1.0%
SO2	24-Hour	261.9	5.0	5	0.07	-	SIL - 1.4%
SO2	3-Hour	1309.3	25.0	25	0.24	-	SIL - 1.0%
SO2	1-Hour	196.4	7.8	-	0.64	-	SIL - 8.2%
PM 2.5	Annual	12.0	0.2	1	2.01	7.25	NAAQS - 60.4%
PM 2.5	24-Hour	35.0	1.2	2	3.9	19.0	NAAQS - 54.3%
PM 10	24-Hour	150.0	5.0	-	29.7	124.6	NAAQS - 83.1%
PSD Class I PM10	24-Hour	-	0.3	8	0.23	0.64	Increment - 8.0%
PSD Class I PM10	Annual	-	0.2	4	0.018	-	SIL - 9.0%
PSD Class II PM10	24-Hour	-	5.0	30	29.7	29.8	Increment - 99.3%
PSD Class II PM10	Annual	-	1.0	17	11.8	11.9	Increment - 70.0%

1- Lowest Applicable Standard for either NMAAQs or EPA NAAQS

2- NMED refers to this as a "Significance Level"

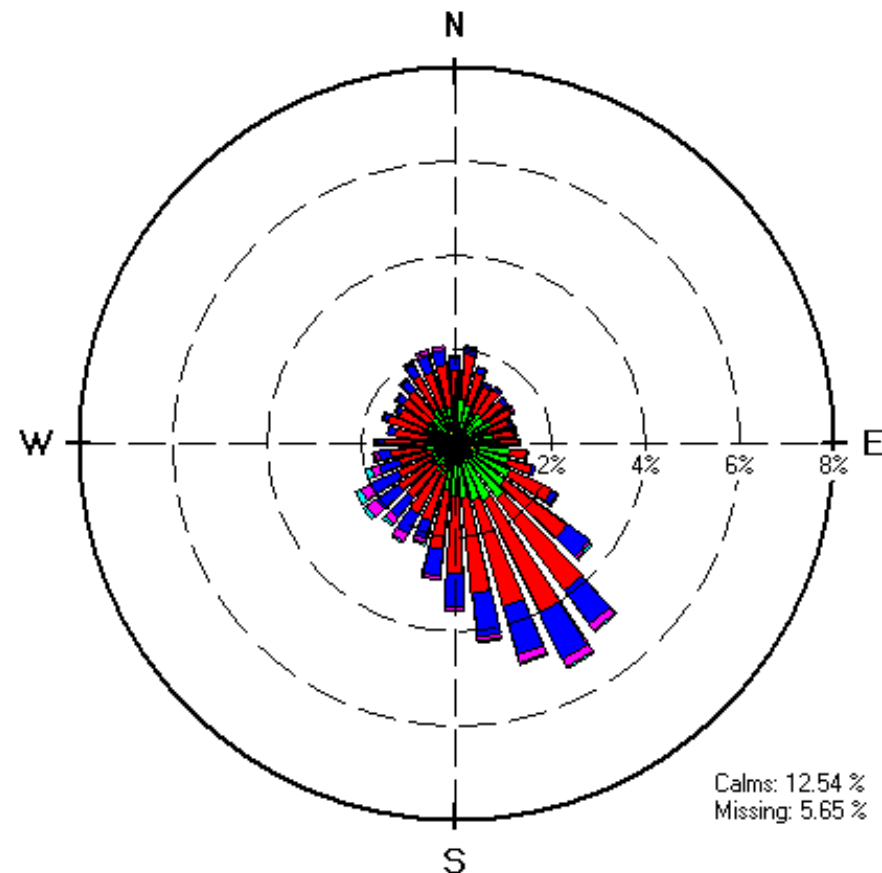
3- Cumulative Contribution equals Facility contribution + background contribution + neighboring sources

# Facility Dispersion Modeling

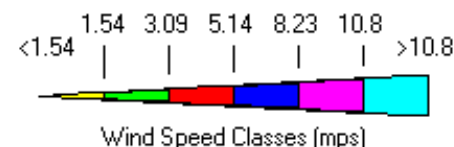
- Prior to Modeling, consulted with NMED Modeling Section on Meteorological Data
- Modeling Protocol submitted to NMED on April 29, 2021
- Fugitive dust sources were input as volume sources per NMED source inputs
- Point Sources (Water Heaters) were input as point sources
- Dispersion Model was run using the most recent available AERMOD version
- Facility Impacts Below all New Mexico and Federal Ambient Air Quality Standards
- Facility Below all Class I and Class II PSD Increment Limits

# Meteorological Data Set

- Holloman Air Force Base Surface Data
- Santa Teresa Upper Air Data
- 5 Years - 2016 through 2020
- The Most Recent Available Update of AERMET Used
- Significant Calm and Low Wind Speeds



Calms: 12.54 %  
Missing: 5.65 %



Note: Diagram of the frequency of occurrence of each wind direction.

Met File Type: AERMET SFC  
File: HOLLOMAN2016\_2020.SFC

**Roper CBP Met Data  
2016- 2020 Windrose**

Station No. 23002  
HOLLOMAN AFB AIRPORT, NM  
Period: 1/1/2016 - 12/31/2020

# Conclusions

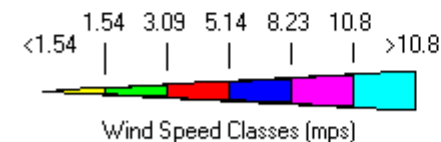
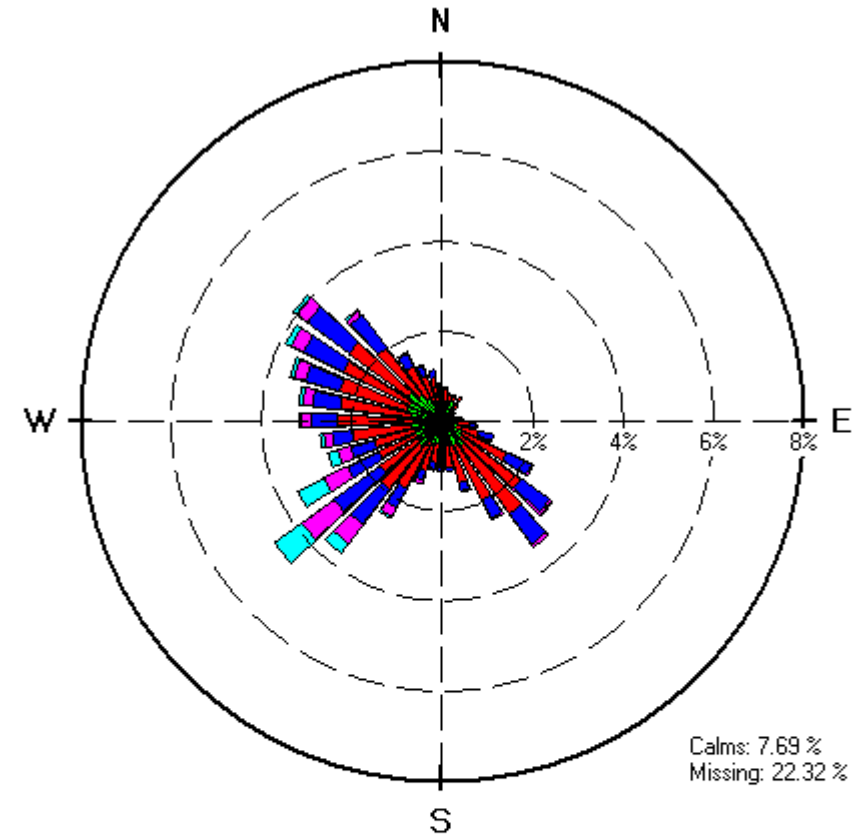
- The Application Demonstrates Compliance with the applicable regulations, NAAQS, and PSD Increments
- NMED proposed additional conditions to the permit, including additional monitoring and recordkeeping requirements.
- Even though the facility, as proposed, meets applicable requirements, the additional permit conditions proposed by the NMED are accepted by Roper.

# Rebuttal Testimony



# Meteorological Data Set

- Consulted with NMED Modeling Section on the appropriate meteorological data set
- I created and re-ran the models using the Sierra Blanca Meteorological Data and it resulted in lower cumulative concentrations for all pollutants
  - The Sierra Blanca data set does not meet EPA's requirement of a 90% complete data base before substitution<sup>(1)</sup>
- Using Holloman data resulted in higher modeled concentrations, therefore is more conservative
- (Sonterra SOI, Villarreal Opinion A)
- <sup>(1)</sup> EPA Meteorological Monitoring Guidance for Regulatory Modeling Applications, Section 5.3.2



Note: Diagram of the frequency of occurrence of each wind direction.

## Sierra Blanca 2016- 2020 Windrose

Station No. 93083  
SIERRA BLANCA RGNL  
AIRPORT, NM  
Period: 1/1/2016 - 12/31/2020

Met File Type: AERMET SFC  
File: RUIDOSO2016\_2020.SFC



# AERMET & AERMOD 19191 versus 21112

- I ran the modeling for this facility prior to the availability of Version 21112 for AERMET and AERMOD
- The updates to AERMET and AERMOD Version 21112 did not change anything that would have an impact on the facility modeling results.
- I re-ran the meteorological data in the updated Version 21112 AERMET
- I then re-ran the models in AERMET and AERMOD Versions 21112 and it did not result in any changes in modeled concentrations
- (Sonterra SOI, Villarreal Opinion B; Bernal Opinion B)

# Haul Road Trips

- Modeling was performed for the facility operating at the maximum production rate of 125 cubic yards per hour.
- Draft Permit Condition A112 permits 305 round truck trips per day.
- This condition does not discriminate between the types of haul road trips
  - Water, product delivery, and raw material trips are included, and all treated the same in the daily count
- (Sonterra SOI, Villareal Opinion C, Martinez Opinion C)

# Particle Density Sizes

- ▶ All particle density sizes used were NMED approved values
- ▶ Lime (3.3 g/cm<sup>3</sup>) was incorrectly used as a particle density for cement (2.85 g/cm<sup>3</sup>)
  - ▶ The use of the higher lime particle density resulted in higher concentrations at the boundary, a more conservative result.
  - ▶ A re-run of the models for PM-10, with the correct particle density, confirmed the modeled concentration decreased slightly
- ▶ (Sonterra SOI Villarreal Opinion F, Bernal Opinion H)

# Fugitive Dust Emissions – Aggregate Piles

- For calculations, no controls were applied for both the controlled and uncontrolled hourly emission rates. The uncontrolled emission rates were used in the modeling analysis
- Modeling with uncontrolled aggregate piles demonstrated compliance with applicable regulations and standards
- NMED has proposed the option of adding additional moisture content at either the aggregate storage pile or at the unloading of the feed hopper in Draft Permit Condition A502
- Additional moisture added to the aggregate storage piles will reduce emissions even further than what was originally modeled
- (Sonterra SOI Edler Opinion C)